Problem G: Great Coin Game
Time Limit: 5 seconds

Description
Before the game begins, each of *n* students writes down a unique string of length *m* consisting of only 'H' for head and 'T' for tail (any 2 students will not write the same string). Subsequently, when the game begins, a fair coin is flipped repeatedly until the last *m* flips matches one of the pre-written strings. Compute the probability of each student winning a prize.

Input
A number of of inputs (≤**100**) with the following format.
The first line has *n, m*. Next, we have *n* lines, each with a string of length *m* consisting of 'H' and 'T'. Note that $1 \le n, m \le 300$.

Output
Print the probability of each student winning, one on each line. Round to 6 digits after decimal.

Sample Input
```
3 3
THT
TTH
HTT
```

Sample Output
```
0.333333
0.250000
0.416667
```